

UNITED STATES PATENT APPLICATION FOR:

**AN APPARATUS AND METHOD FOR ADHERING AND RELEASING
ITEMS**

FIELD OF THE INVENTION

[0001] The present invention relates to magnetic utility apparatuses. Specifically, embodiments of the present invention relate to adhering and releasing items using magnetic apparatuses.

BACKGROUND OF THE INVENTION

[0002] There exist many magnetic apparatuses for attaching items such as papers to metal or other surfaces. For example, numerous refrigerator magnets exist for attaching light items, such as papers, to a refrigerator. Typical apparatuses for adhering or releasing items from surfaces require two-handed operation, for example, using one hand to release and hold the apparatus and the other hand to hold the items being placed or released. Apparatuses may be operated using one handed operation, however, such operation may require relatively complex multi-step one-handed operation, for example, using one side of a hand to release and hold the apparatus and the other side of the hand to simultaneously hold the items being placed or released.

[0003] It would be highly advantageous to have a magnetic apparatus that may enable, for example, relatively simple or easy one-handed operation. For example, such an apparatus may be used by people with disabilities preventing them from using both hands. Furthermore, there may be a need for an apparatus for adhering or releasing items, which can be relatively simply operated by one hand, for example, while the other hand is concurrently utilized for another purpose. For example, an apparatus may be needed that enables easy and rapid clipping of a paper on to a metal or magnetic surface using one hand, in such a way that the items being held or clipped are prevented from falling off the metal or magnetic surface.

SUMMARY OF THE INVENTION

[0004] There is provided, in accordance with an embodiment of the present invention, one or more rockable magnetic apparatuses to enable adhesion and releasing of elements to or from, for example, a metal or magnetic surface. The apparatus may include a rigid body, magnets, and sides or portions of the body that meet at a base having an angle greater than 180°. According to some embodiments of the present invention, an apparatus may be provided that enables single action operation, and may prevent the falling of the magnetic apparatus and/or the items being held by it when attaching or detaching items. The apparatus may have flexible or detachable body sides. Two or more apparatuses may be used in combination, to hold items to a surface or between the apparatuses.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The principles and operation of the apparatus and method according to the present invention may be better understood with reference to the drawings, and the following description, it being understood that these drawings are given for illustrative purposes only and are not meant to be limiting, wherein:

[0006] Figs. 1A-1C illustrate various views of an example of a rockable magnetic clip, according to some embodiments of the present invention;

[0007] Figs. 2A and 2B are illustrations of a rockable magnetic clip apparatus with a magnet on a single side of the apparatus, according to some embodiments of the present invention;

[0008] Figs. 3A and 3B are illustrations of a rockable magnetic clip apparatus with multiple sides, according to some embodiments of the present invention;

[0009] Figs. 4A and 4B are illustrations of a rockable magnetic clip apparatus with a foldable side, according to some embodiments of the present invention;

[0010] Figs. 5A-5C are illustrations of a peg-like magnetic apparatus, according to some embodiments of the present invention; and

[0011] Fig. 6 is a flowchart illustrating a method for adhering and/or releasing items to a metal or magnetic surface.

[0012] It will be appreciated that for simplicity and clarity of illustration, elements shown in the figures have not necessarily been drawn to scale. For example, the

dimensions of some of the elements may be exaggerated relative to other elements for clarity. Further, where considered appropriate, reference numerals may be repeated among the figures to indicate corresponding or analogous elements throughout the serial views.

DETAILED DESCRIPTION OF THE INVENTION

[0013] The following description is presented to enable one of ordinary skill in the art to make and use the invention as provided in the context of a particular application and its requirements. Various modifications to the described embodiments will be apparent to those with skill in the art, and the general principles defined herein may be applied to other embodiments. Therefore, the present invention is not intended to be limited to the particular embodiments shown and described, but is to be accorded the widest scope consistent with the principles and novel features herein disclosed. In other instances, well-known methods, procedures, and components have not been described in detail so as not to obscure the present invention.

[0014] In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be understood by those skilled in the art that the present invention may be practiced without these specific details.

[0015] Embodiments of the present invention may enable implementation or usage of a rockable apparatus that may include one or more magnets. Such an apparatus may be attached to a metal or other surface by pressing at least one part of the apparatus and thereby adhering and/or releasing item(s) to/from the metal or magnetically attractive surface, without the need of disconnecting the apparatus from the metal or magnetic surface. Such an apparatus may enable, for example, one-hand or single action attachment of items such as paper sheets, photographs, bills, folders, pens, pads, disks, etc. to surfaces such as fridges, other magnets, memo boards etc. A rockable magnetic apparatus may adhere to elements or surfaces made of, for example, steel, iron, nickel, cobalt, gadolinium, or other suitable materials. Such an apparatus may enable simple, optionally one-handed or single action detachment of items such as paper sheets, photographs, bills, files, folders etc. to surfaces such as fridges, other magnets, memo boards etc., without causing the magnetic apparatus to fall, by a one process pulling movement of the item away from the surface. The phrases "one-handed", "single-action" and the like, as used herein, may refer to operations requiring relatively simple coordination, such that one handed operation, or operations using substantially simple and single actions at a time, may implement the relevant operations.

[0016] Reference is now made to Figs. 1A-1C, which are schematic diagrams illustrating views of a rockable apparatus 10, according to some embodiments of the present invention. The body of rockable apparatus 10 may be rigid and constructed of material 11 such as, for example, plastic, wood, paper, metal, glass, rubber, fiberglass, polycarbonate, ABS and any other suitable material or combinations of materials. Apparatus 10 may be made of flexible or partially flexible material. Rockable apparatus 10 may have at least one area 12, such as a hole, cavity, or gap, etc., where a magnet 16 may be attached. Apparatus 10 may be further equipped with at least one press zone 13 that may enable pressing to operate the rockable apparatus 10 by placing one or more sides in contact with, for example, a surface that may be attracted to magnet 16. A rocking effect may be created by the angle and/or shape caused by the base 14 of apparatus 10. Magnet(s) 16 may be, for example, NdFeB based, such as, for example, N35/Zn.coated magnets, or may have any other suitable magnetic properties. Magnet(s) 16 size may have, for example, a 12 mm diameter, with 3mm thickness, and a 0.5 phase at 45 degrees. Any other magnet sizes, shapes, phases, and angles may be used.

[0017] Magnet(s) 16 may be attached to apparatus 10 using a plastic clamp (e.g., snaps), glue, ultrasonic means, pressure, melting, insert molding, or any other suitable attaching means known in the art. Apparatus 10 may be formed with a variety of base shapes or supports, or with a variety of base angles (e.g., external angles on the side of the magnets, in the place indicated by 14 in fig. 1A), that may enable a rocking motion, such as, for example, a to and fro motion, side to side motion, click-able operation, or alternative movement of apparatus 10 between two or more sides or portions 17, 18. For example, apparatus 10 may be formed with at least two sides or portions 17, 18 that meet at base 14, the portions 17, 18 being more than 180° (degrees) apart, according to an external angle at base 14. The inner side of apparatus 10, as indicated by the surface containing pressing zones 13, may be flat or of any angle greater or less than 180°. Any angle between the portions, either externally or internally, may be provided such that a rocking motion is enabled, or such that only one or more selected portions may be attached at one time to a flat surface, but not all the portions. For example, a relatively flat and/or relatively small angle, such as, for example, marginally greater than 180° may be provided externally between sides or portions 17, 18 of apparatus 10, to enable the rocking or clicking operation of the apparatus.

[0018] The angled or rocker-shaped base of apparatus 10 may act as a fulcrum, enabling usage of a lever effect when releasing a side or portion of apparatus 10. For example, in the case where a powerful magnet is being used to attach a side of apparatus 10 to a surface, the magnet may be released by pressing on a non-adhered side of apparatus 10, the lever effect aiding the release of the currently adhered side or portion. Apparatus 10 may be attached or magnetically bonded to a surface on either an external or internal side. For example, apparatus 10 may be attached to a refrigerator at the point of magnet 16 (e.g., on the external side of apparatus 10), or at the point of pressing area 13 (e.g., on the internal side of apparatus 10, and optionally on the entire inner surface of apparatus 10 in the case where inner surface of apparatus 10 is flat).

[0019] Press zone 13 may include finger holes, hand holes, or troughs etc. for comfortable gripping, holding, or pressing etc. of apparatus 10. Apparatus 10 may be constructed with one or more detachable sides, such that side 17, 18, for example, may be detached from apparatus 10, and optionally attached in line with a magnet in the remaining portion of apparatus 10. For example, a magnetic apparatus may be manufactured with one side of apparatus 10, such as 18, and may, for example, be mechanically attached to another side, such as 17.

[0020] Fig. 1B illustrates a view of two magnets 16, according to some embodiments of the present invention, when attached to apparatus 10. Fig. 1C illustrates a view of press zones 13, or pushing areas, according to some embodiments of the present invention, located on the opposite side from magnet 16 of a portion 17, 18 of apparatus 10. Other magnet and/or press zone forms, shapes, and sizes may be used.

[0021] Reference is now made to **Figs. 2A and 2B**. As can be seen in Figs. 2A and 2B, according to some embodiments of the present invention, not all portions 17, 18 are provided with magnet 16. For example, magnet 16 may not be provided on portion 17 of apparatus 10, to provide mono-stable behavior of apparatus 20 on a surface. Such an embodiment may enable usage of apparatus 20, for example, to adhere an item to a surface between the surface and one side 18 of apparatus 20. Upon release of side 18, by, for example, pressing on a pressing zone 22 on side 17, side 18 may automatically re-adhere to the surface upon release of pressing zone 22 on side 17.

[0022] Reference is now made to **Figs. 3A-3B**. According to some embodiments of the present invention, apparatus 30 may be provided with a plurality of sides or portions. As can be seen with reference to Figs. 3A and 3B, each portion or side of apparatus 30 may

optionally have at least one area 31, such as a hole, cavity or gap, etc., where magnet 36 may be attached. For example, apparatus 20 may be formed with four sides or portions that meet at a base 38, base 38 providing an angle of orientation between two or more sides of more than 180 degrees. Any angle between the portions may be provided such that a rocking motion or clicking operation is enabled. One or more pressing zones 33 may be provided. Any number of portions or sides may be provided, whether each side has a magnet or not.

[0023] Reference is now made to **Figs. 4A and 4B**. According to some embodiments of the present invention, apparatus 40 may enable at least one side or portion such as 47 to fold over or be detached from body of apparatus 40, to enable placing of the side or portion 47 in proximity to a second side or portion such as 48, thereby generating a magnetic attraction between portions 47 and 48. The polarity of magnet 16 may be opposite to that of magnet 46, or a variety of combinations of magnet polarities may be used, to enable magnetic attraction between portions 47, 48 etc. of apparatus 40. The resultant magnetic attraction between the two magnets may enable holding of elements such as papers, pictures etc. in between the two portions 47, 48 of apparatus 40. Apparatus 40 may have a hinge 42 or alternative joint apparatus that holds portions 47 and 48 together, or to body of apparatus 40, and enables swinging of portion 47 relative to portion 48. A plurality of sides may be adapted to be foldable or detachable, and may have any combination of similar or opposite magnetic forces.

[0024] Reference is now made to **Figs. 5A-5C**, which illustrate examples, according to an embodiment of the present invention, of combining magnetic apparatuses to form a peg-type apparatus. As can be seen in Fig. 5A, two magnetic rocker apparatuses 50 and 51 may be placed in proximity to one another, thereby creating a magnetic force that may magnetically bond the two apparatuses together, to form apparatus 510. One or more sides or portions 52 of apparatus body 50 may have a magnet 54 with an opposite polarity to one or more magnets 55 on a side or portion 53 of at least a second apparatus 51. In this way, a peg-like apparatus may be formed, such as apparatus 510 of fig. 5B, which may be used, for example, to hold or suspend items, between one or more magnetically bonded sides of the apparatus, depending on the number of magnetic sides provided. Magnetically bonded peg-like apparatus 510 may enable holding of a relatively thick item 520, as can be seen with reference to Fig. 5C. Item 520 may be held by a relatively large surface area of apparatuses 50 and 51, since apparatuses 50 and 51

need not remain physically joined during a holding operation of item 520. Magnetically bonded peg-like apparatus 510 may be magnetically bonded to a surface, such as a metal or magnetically attractive surface.

[0025] According to some embodiments of the present invention, promotional information may be printed, molded, or otherwise adhered or integrated onto the magnetic apparatus 10. Such visual printed message material may include painted symbols, printed foils, graphic screens, and/or molded-in or engraved information etc. Embodiments of the present invention may include at least one attachment for the apparatus that may enable attaching content holding apparatus to apparatus 10. For example, attachments such as frames, adhesives, magnets, vacuum caps, clips, hooks and screws, or any other suitable items may be used.

[0026] According to some embodiments of the present invention, different shapes may be used for the magnetic apparatus 10 to enable production of different looks or forms, as long as the rockable principal is maintained. For example, apparatus 10 may resemble an image, figure, item, element, ornament, object etc. Apparatus 10 may be, for example, a doll, a slice of pizza, a figurine, a coin, a ball, a notepad, a company logo, or any other suitable form.

[0027] Apparatus 10, according to some embodiments of the present invention, may be used for games or entertainment, by, for example adhering or releasing multiple apparatuses. Some embodiments may, for example, enable usage of multiple apparatuses that may be adhered to each other and/or to a metal surface, magnetic surface, or alternative suitable surface. Some embodiments, for example, may enable usage of multiple apparatuses that may be attached to each other, thereby providing a magnetic object that may be operated with or without a metal or magnetic surface, such as, for example, a desktop, play area or other suitable location.

[0028] According to a preferred embodiment of present invention, different kinds and sizes of magnets can be placed in an apparatus, enabling apparatuses with variable strengths, sizes, and shapes. For example, portions such as 17,18 of apparatus 10 (Fig. 1) may have magnets 16 which may differ in size and/or shape. For example, shapes of magnets used may include circles, squares, triangles, rectangles, cubes, or any other suitable shapes or combinations of shapes. Such an embodiment may enable usage of apparatus 10 for adhering and releasing of different size and/or type of objects or items

by the respective apparatus portions 17,18. A plurality of apparatus portions may be used.

[0029] According to one embodiment of the present invention, apparatus 10 may be formed so as to have a pen, a pencil, or another writing apparatus inserted in the apparatus. Other writing or drawing apparatus may be inserted in apparatus 10 or placed on apparatus 10. Other suitable apparatus attachments may be integrated with or attached to apparatus 10.

[0030] According to one embodiment of the present invention, apparatus 10 may be formed so as to include at least one sensor. Such a sensor may be used, for example, to receive and optionally measure and/or process environmental data such as, for example, temperature, humidity, illumination and other data etc. A sensor-based apparatus may be provided with a display panel to enable displaying of received, measured, and/or processed sensor data. A plurality of sensors may be used.

[0031] According to one embodiment of the present invention, apparatus 10 may be formed so as to include at least one dynamic display element, such as, for example, a L.E.D. display panel. Such display elements may be used to display data such as, for example, temperature, changing content, and alternative data etc. Other suitable display elements may be used.

[0032] According to one embodiment of the present invention, apparatus 10 may be formed so as to include a computing unit, such as an integrated chip. For example, a chip may be included in apparatus 10 to provide, for example, the time. Other suitable computing units may be used.

[0033] According to a further embodiment, apparatus 10 may include functional means such as a lighting element. Such a lighting element may be a LED source, a flashlight, or any other suitable lighting apparatus or element. One or more power sources may be supplied to the lighting element. For example, lighting element may be powered by a battery, solar panel, or alternative powering sources. Lighting element may be used to illuminate at least a part of apparatus, or a display area of apparatus etc. According to some embodiments of the present invention, alternative functional units may be added, adhered or otherwise integrated into apparatus 10, for example, a bottle opener, key holder etc.

[0034] According to an embodiment of the present invention, a magnetic rocker apparatus may be provided with at least two magnetized sides, separated by an element

that may function as a bridge or obstacle between the magnetic sides, enabling swinging or rocking of the apparatus between the magnetized sides. The rocker apparatus in such an embodiment may be a flat item, such that the sides are 180 degrees from one another. The rocker apparatus may have sides joining together at a base, the sides having any angle towards one another, such as less than 180 degrees or greater than 180 degrees.

[0035] Of course, other structures and dimensions may be used. For example, the magnetic apparatus according to some embodiments of the present invention may include several magnets and several pressing points, such that pressing on a point may enable adhering or releasing of items to/from the apparatus. Multiple items may be simultaneously adhered or released by apparatus 10 or apparatus 30.

[0036] According to an embodiment of the present invention, a method may be provided for adhering and/or releasing items to/from a surface, such as a metal or magnetic surface etc. As can be seen with reference to **Fig. 6**, in operation 61 a user places a magnetic rocker apparatus on a metal or alternative suitable surface, such that the apparatus is magnetically bonded to the surface at at least one point. In operation 62 a user may insert an item (e.g., primary attachment), such as papers or other selected elements, between an un-pressed portion of the rocking apparatus and the surface, by, for example, sliding an item under a raised portion of apparatus 10. Operation 62 may be enabled without any pressing or releasing action of an apparatus portion or side, due to an opening between the surface and apparatus 10, due to the angle separating the non-pressed portion of the apparatus and the surface. Additionally, the magnetic force of one or more of the magnets may enable primary attachment of an item to the surface, without acting on the magnets by, for example, pressing on the apparatus sides. In operation 63 a user may implement an additional attachment (e.g., secondary attachment) of the item to the surface, by pressing on a second portion or side of apparatus 10, which was previously raised above the surface. Such a press may, for example, attach or magnetically bond the pressed side or portion of the apparatus to the surface, thereby attaching the item to the surface.

[0037] In operation 64, a user may detach or release an item attached to a surface, and may thereby release the previously attached portion of the apparatus, by pulling the item away from the surface. Operation 64 may cause the apparatus portion that is currently attached to the surface to release, enabling release of the item. Operation 64 may in parallel cause the previously un-pressed portion of the apparatus to magnetically attach

to the surface, thereby bonding the apparatus to the surface, such that apparatus may remain on surface, without being manually held (e.g., the apparatus may not fall down) when operation 64 is implemented.

[0038] In operation 64, a user may detach or release an item attached to a surface, by pressing on a pressing zone to release an item from being held between a magnet and a surface. Upon releasing the magnet and the surface, a user may remove an item previously held by the previously attached portion of the apparatus. According to some embodiments of the present invention, the above adhering and/or releasing operations may be executed using a one step action, thereby enabling operation by users with limited facilities or capabilities, or someone who has only one hand currently available. Any combination of the above steps may be implemented. Further, other steps or series of steps may be used.

[0039] It will be appreciated that additional elements or combinations of elements may be implemented on or integrated with apparatus 10. Furthermore, additional modes, structures, angles, and dimensions etc. may be implemented.

[0040] The foregoing description of the embodiments of the invention has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. It should be appreciated by persons skilled in the art that many modifications, variations, substitutions, changes, and equivalents are possible in light of the above teaching. It is, therefore, to be understood that the appended claims are intended to cover all such modifications and changes as fall within the true spirit of the invention.